

# Stem Cell Therapy

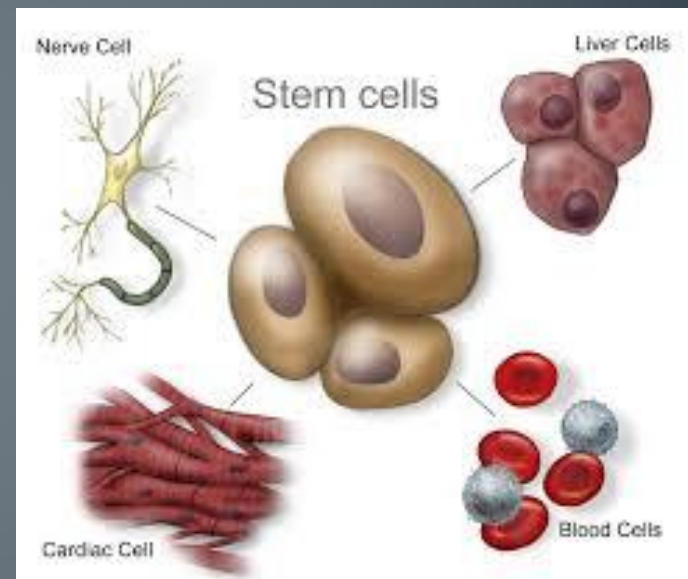
Dr. Erica Johnson

## Fun Fact

- 10 million cells die in your body every minute of every day. Stem cells are what allow you to make new cells!

# What are Stem Cells?

- They are the “paramedics” of cells
- They are primitive cells present in almost every tissue
- Self-replicating
- Differentiate
- Pharmaceutical factories



# What can Stem Cells Do?

- They can turn into tendon, ligament, bone, cardiac tissue, vessels, nerve tissue, etc.
- Block pain
- Down regulate inflammatory mediators
- Block cell death
- Stimulate angiogenesis (make new blood cells) – study
- Chondroprotective (protect cartilage)
- Anti-fibrosis (blocks scar tissue)
  - Liver fibrosis/cirrhosis – chronic liver disease can lower the level of fibrosis after one IV dose

# Why Are Stem Cells A Big Deal?

- They are new and cutting edge!!
- Stem cells can be given IV and will travel to the area of inflammation. They can also be given directly into a joint or a combination of both.
- Treating kidney disease, liver disease, nerve injuries, osteoarthritis, cruciate tears, muscle tears, elbow dysplasia, shoulder instability and many more!
- They can give quality of life back without extensive surgeries and time
- Quick improvement noted with no adverse effects
- FDA approved! Must be an autograft (taken from the patient and given back to the patient)

# How Do We Get Stem Cells?

- Basic procedure where our patients go under anesthesia for a short period of time and we collect fat. Some of our overweight patients we can take fat from just behind the shoulder blades. The other option is to go for falciform fat that is present just above the liver. This is the best location to get fat from. The procedure takes about 30 minutes.
- The fat is sent out to Vet-Stem where they will break down the fat into stem cells and in 48 hours send you back stem cells for injection or just store them.
- Recovery time is about 10-14 days for the incision to heal.
- Adding into our spay/neuter estimates to collect as puppies and kittens to avoid another surgery later on in life (Stem-Insure)

# Vet-Stem Biopharma

- Vet-Stem was made in 2002 to use stem cell therapy on animal patients
- Level 1 studies performed which are the best studies (highest level supporting data)
- Standards of handling, processing and banking stem cells



# What Happens To The Fat At Vet-Stem?

- Break down the fat into stem cells
- Determine accurate cell count and assess viability
- Adjust the volume for each individual patient
- Sterile fill of syringes
- Cryopreserve for 14+ years (the life of your pet)



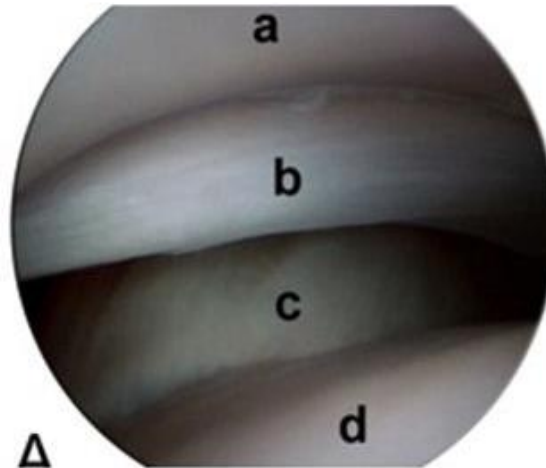


# Canine Medial Shoulder Instability

- Agility dogs!
- Ligament within the shoulder joint can tear or rupture
- Studies have shown with diagnostic joint scope a full tear and significant joint damage
- Stem cells are injected and re-scoped 90 days post
- Normal ligament and new blood cells coming to heal the area.
- Patient returned to normal activity level



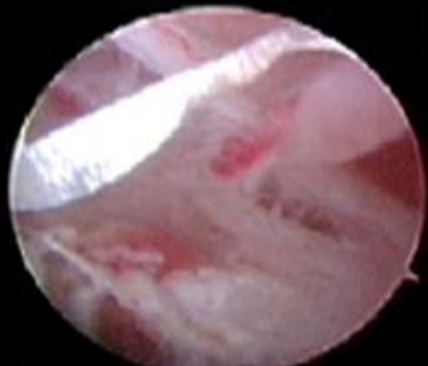
# Medial Shoulder Instability Scope Images



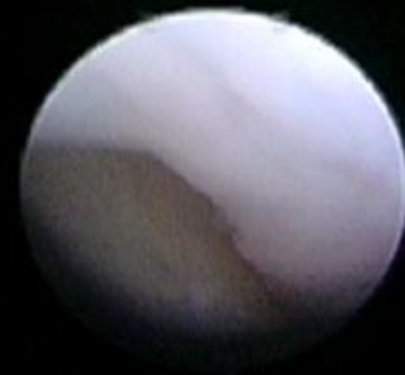
- a. Glenoid
- b. Glenohumeral lig.
- c. Subscapularis ten.
- d. Humeral head

Sherman Canapp, DVM, Dipl. ACVS; Presented AVMA 2009

*Pre – Stem Cell*

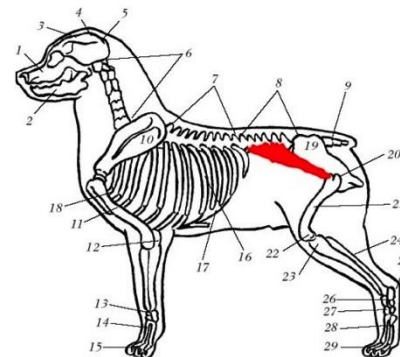


*90 Days Post – Stem Cell*



# Iliopsoas Tears

- Police dogs and agility dogs
- Diagnosed with diagnostic ultrasound with large full thickness tears
- Stem cells injected into the defect
- Within ~11 weeks the area is completely filled in on ultrasound and they are back to normal work
- Typical healing for iliopsoas injuries and especially a full tear is around 9 months



# “Hunter”

- 9 year old Golden Retriever
- Severe osteoarthritis in the left hip
- Could not run or leap and when walking the leg would drag and was painful
- Stem cells were collected and they injected the hip 48 hours later
- Within 2 weeks he was a different dog – walking well, jumped on the bed and getting better every day



# “Mason”

- 2 year old male neutered Bernese
- Severely lame on the right elbow
- Diagnosed with elbow dysplasia
- Surgery to clean up the elbow and rechecked at day 90 – no change noted
- Stem cells injected on day 90 with the recheck and the elbow was re-scoped 90 days later
- Joint was completely normal on scope and he was back to normal – full cartilage regeneration



# Outcome Expectations

- 75% of all dogs have positive outcomes by 60 days
- 80% of owners report improvement by 90 days
- 2/3 of dogs go past 1 year without needing another treatment
- 28% decrease in chronic medications and 34% off of pain medications completely
- Expectations! You will not get a puppy back but will get a better quality of life!



# Stem Cells Sound Amazing! What Is The Cost?

- \$1470 which includes processing 2 tubes, dose for 1 treatment and 1<sup>st</sup> year of storage
  - \$100 for any extra tube if you need more fat to harvest
- \$410 for recovered bank doses
- \$750 for culturing of new stem cells
- First year of storage is free but \$150/year afterwards for storage
- Procedure at Atrium is about \$2300 for the harvest, anesthesia and to get cells back for the first injection!
  - Total hip replacement = \$10,000
  - Kidney transplant = \$20,000

\*Prices subject to change\*

# Stem-Insure

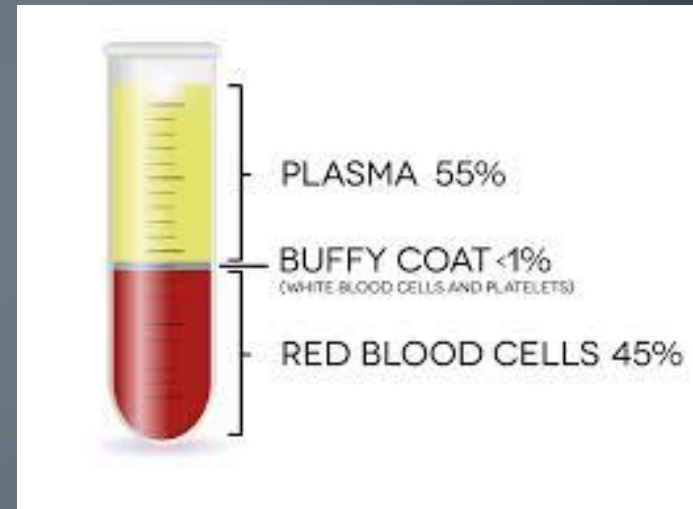
- New service we offer with our spays and neuters (can be done with TPLO other major surgeries)
  - During their spay we collect fat (about the size of 1-3 grapes depending on the size)
  - Fat is shipped to Vet-Stem and stored for life until they need it
  - Cost = \$750-\$800 total with the spay/neuter
  - This can be done in older dogs as a preventative measure during a routine dental procedure or other anesthetic event besides a cancerous tumor removal
- \*Prices subject to change\*





# Platelet Rich Plasma (PRP's)

- Platelets are the first responders to injury. Help to stop bleeding and have factors that stimulate healing
- Used for tendon and ligament injuries as well as osteoarthritis
- Can accelerate the healing of non-union fractures
- Typically used with Stem Cell therapy



# Platelet Rich Plasma Collection

- Need a special system to separate out and extract the buffy coat
- Buffy coat contains platelets and white blood cells BUT white blood cells can have a negative impact within joints
- Variable data on collection and varies between animals
- Have to be given in the affected joint – sedation/anesthesia is necessary
- Much more to learn about this method...

**PRP Centrifuge**



**PRP KIT**



**PRP tube**



**CE ISO**

xingke.en.alibaba.com

# Questions?

